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for the infection of the milk was not so easy. The milk might have become infected in the hands of either the dealer or the producer. Inasmuch as a few cases of the epidemic developed that were not supplied with milk from the dealer, but were supplied by other parties that had been using some of the milk cans in common with him, the presumption was strongly in favor of the view that the infection occurred while the milk was in the hands of the dealer. It seems that the dealer was in the habit of washing out his cans himself, and, while he obtained most of his supply from the producer in question, at times he secured an extra supply from other parties. No particular attention was paid to the cans that were used, so that they were often mixed up and returned to different parties after they had been cleaned by the dealer.

No case of typhoid had occurred at the house of either the dealer or the producer, so that direct infection of the milk did not seem probable. An examination of the water supply was then made. At both places shallow wells were found, that of the milk dealer's being only thirteen feet deep with nearly twelve feet of water in it. The well was surrounded on several sides by privies, an extremely foul one being within twenty-five feet of the well. It was the habit of the dealer to first rinse out the milk cans with water from this well, then they were thoroughly cleansed with hot water and soda, and finally *rinsed in cold water again that was taken from this well.*

Both the bacteriological and chemical examination of water from the two wells was made.

Neither of the wells were good and that of the milk dealer was grossly contaminated, having nearly 70,000 germs per cubic centimeter.

Typhoid bacteria were not discovered, but this is not surprising. It is possible that the privy near the well may have been

used by some unknown person, as it was close to and easily accessible from a railroad. There is no positive evidence, however, that the water was contaminated except in the history of the epidemic. The evidence, however, is so strong that there can be no valid objection to the conclusion that milk was infected by washing the cans with contaminated water.

H. L. RUSSELL.

MADISON, WIS.

ELEVENTH INTERNATIONAL CONGRESS OF AMERICANISTS.

On the fourteenth of October, in the beautiful Salón de Actos de la Escuela Preparatoria in the City of Mexico, was inaugurated a scientific meeting, not only memorable for our great sister Republic, but in many respects unique and *sui generis*.

Though to the official proceedings in Spanish reference must be made for an authoritative account of the mature work submitted to this august assemblage, yet the readers of SCIENCE may not be uninterested in a few words about the external and social aspects of the Congress.

The preliminary session on October 14th was remarkably well attended and was stamped by an air of elegance, distinction, prestige, which is by no means noticeable at our own science meetings.

The Cabinet Ministers of Mexico, the Ministers of the Great Powers of Europe and America, the Governors of the Mexican States, mingled with the men of science, made an array which we could not duplicate outside of Washington. The roll of the delegates was called, and each one presented his credentials, which were then scrutinized.

In accordance with Mexican social etiquette, the President of the Republic, Porfirio Diaz, was debarred from being present because of the recent death of his father-in-law, Romero Rubio.

The Congress, to express its respectful regrets in this matter to President Diaz, appointed a special commission of four, el Excelentissimo Sr. D. Justo Zaragoza, a delegate from Spain, Dr. George Bruce Hasted, a delegate from the United States, and two delegates from Mexico.

This commission visited the President in the National Palace, and to its brief address, prepared and delivered by the chairman, an appreciative answer was returned, and both were read in the next general session of the Congress. This session began at 4 o'clock on October 15th, in the same hall, once the chapel of the oldest university on this continent, San Ildefonso, now modestly called Escuela Preparatoria, though the people cling to the old name.

Sr. Julio Zárate read the minutes of the preceding meeting, and then the general secretary, Sr. Trinidad Sánchez Santos, read an account of the work of organization, which began last April.

At 21 of the 23 meetings of 'la junta organizadora' Sr. Lic. Joaquin Baranda, Secretary of Justice and Public Instruction, presided.

This may give some hint of how much the Congress owes to this truly enlightened man, founder also of the Anthropological Museum, which for its age is unsurpassed. The junta sent special invitations to eminent scientists.

From special gifts and offerings of men of science the junta made a highly valuable collection, particularly important for the study of the pre-Columbian period in America.

With the object of itself making a worthy contribution, the junta had translated twenty-seven of a precious collection of songs of the aborigines found in a MS. of the Biblioteca Nacional. Arrangements were made for an excursion of the delegates to visit the ruins of Teotihuacan and Mitla, those worthy monuments of antiquity.

Following this reading, the President of the Congress, Joaquin Baranda, occupied 'la tribuna.' He praised the Congress at Stockholm for determining, in accordance with true scientific method, to meet in Mexico and study at first hand, objectively, the monuments of American antiquity. He enumerated with erudition the archæological treasures of Mexico, from the northern frontier to Yucatan, and especially those in and immediately about the beautiful capital. He referred to the Calendar Stone, reflection of the astronomical acquirements of the Aztecs and the celebrated Cross of Palenque, mysterious sculpture of the Mayas, a seeming prophecy of Christianity, though long before Christ.

He spoke of the codices, maps, records of tribute to the antique monarchs, now being studied with more enthusiasm than ever before. He spoke of Humboldt, from the peak of Chimborazo enveloping America in that profound regard which made him her scientific discoverer. He finished by welcoming the delegates in the name of the people and the National Goverment, which rejoices to aid whatever signifies progress.

Sr. Lic. Ignacio Mariscal, secretario de relaciones exteriores, in the name of the President of the Republic, then declared the Congress open.

That evening at 8 o'clock a banquet was given by the City Council to the Americanists in the Municipal Palace. There were 200 guests, and the newspapers stated the cost of the banquet at six thousand dollars.

The whole floor from the very entrance was carpeted and heavily strewn with natural cut flowers, on which the guests trod. The records of this City Council date back to 1524, the first minutes being signed by Hernan Cortes, the 'conquistador.' Electricity, gas and wax made a blended light in the beautiful dining hall. The floral decorations were, of course, superb.

The first after-dinner speech was by Sr.

Sebastian Camacho, Mayor of the city, an elaborate eulogy of science and welcome to the Americanists in the name of the city.

The President of the Congress responded.

Alfredo Chavero, author of that rare tome, 'Mexico a traves de los Sieglos,' followed with a toast to the three historians of Mexico—Fernando Romirez, Manuel Orozco y Berra and Joaquin Garcia Icazbalceta.

Dr. Edward Seler, of the University of Berlin, the greatest of all Americanists, spoke in Spanish, maintaining that the civilization of the ancient nations of Mexico was wholly indigenous. When this charming and absolutely unaffected scientist hesitated for a Spanish word, and nervously moved about the seven wine glasses in front of him, his wife, sitting opposite, the only woman at the banquet, herself a brilliant Americanist, suffered feminine tortures for her husband, all unnecessarily, for his speech was the greatest success of the evening, and applauded to the echo.

Dr. Antonio Peñafiel, the most respected of Mexican archæologists, spoke of the earlier historians, Clavigero, Cavo, Veytia and others.

The academician of Spain, Justo Zaragoza spoke of how peace and prosperity under President Diaz had prospered research into Mexico's remote past.

Just after the formal adjournment, Governor Próspero Cahuantzi, a gigantic pure Indian, gave in the Aztec language a speech seemingly eloquent, to which Dr. Seler gave intense attention and in part understood.

At ten next morning, October 16th, the Congress visited the wonderfully rich National Museum. Besides a new catalogue of the Department of Archæology, five other new catalogues had been prepared for the visit of the Congress and were presented to all wearing the badge of 'Americanistas.' Num. 1, Catálogo de la Colección de Mami-

feros del Museo Nacional, segunda edición; Num. 2. Colección de Aves; Num. 3. de Reptiles, were by Alfonso L. Herrera, to whom a prize was lately awarded by our Smithsonian Institution.

The highly creditable Num. 4. Catálogo de la Colección de Antropología del Museo Nacional, 164 pages, with tables, was by Alfonso L. Herrera and Ricardo E. Cicero. The 'Guia para visitar los salones de Historia de México del Museo Nacional' was by Jesus Galindo.

The display lent by the State of Vera Cruz, and the recently discovered colored pictorial ancient manuscripts attracted great attention.

One of these, in depicting the deliberate shooting with arrows of captives bound to a ladder, smacked strongly of the stories of our own 'Indios bravos.'

The rampant cannibalism of the interesting aborigines also came out strongly.

At 4.10 in the University the session was opened by a reading of the minutes, and then the 'Chicomostoc Memoirs,' by L. Amador, of Zacatecas, were read by Roman S. de Lascurain. A paper on the conditions of commerce, money and exchange between the towns of antique Mexico, by J. W. Bastow, was read by J. Breaux.

A discussion about Toltec and Aztec idioms was started between Dr. Seler and Sr. Leopoldo Batres, conservator of public monuments, in which discussion of course Sr. Batres had no chance.

At ten o'clock the next morning, October 17th, the Americanists visited the 'Escuela de Bellas Artes,' whose genial director, besides his Spanish, is fluent in English and German. Each member of the Congress was presented with a specially prepared treatise on Mexican Art, of the very highest interest and value.

At four o'clock the regular sessions were continued.

At eight o'clock on the morning of Oc-

tober 18th an excursion to Popotla was made by wagons, starting from 'la Plaza de la Constitución,' opposite the 'Portal de Mercaderes.'

This was chiefly a visit 'al árbol de la Noche Triste,' the famous tree against which Cortes rested and wept on the night of his terrible defeat. The tree, unfortunately, seems dying, but its tremendous trunk, a wooden tower, may still be a landmark for centuries.

The tree of Montezuma, at the back of Chapultepec, is still flourishing, one the grandest and most impressive of living things on this earth.

At ten o'clock a visit was made to 'la Escuela Nacional de Ingenieros,' where is perhaps the greatest collection of large meteorites in the world.

At four o'clock again in session in the Escuela Prepartoria.

But already we have followed long enough to give an insight into the life of this most enjoyable Congress, and while the fortunate Americanistas go south by rail to Oaxaca, thence to ride to Mitla, digging in the prehistoric past, we face again the unsoftened raw newness of our own United States.

GEORGE BRUCE HALSTED.

AUSTIN, TEXAS.

RECENT INVESTIGATIONS UPON THE EMBRYOLOGY AND PATHOLOGY OF TEETH.

THE embryonic development of the teeth is now a subject of most active investigation, and we are constantly receiving new communications from Leche, in Stockholm; Kükenthal, in Jena, and Röse, in Freiburg. The most striking discovery is that of the existence throughout the mammalia of remnants of two series of teeth, preceding the milk and permanent series. The teeth represented in these two series are entirely vestigial; both precede the embryonic development of the milk teeth, and are indicated merely by indentations of the

dental fold. So far as known, these germs never develop enamel, but they constitute the most positive evidence of the derivation of the mammalia from reptilian or amphibian ancestors with a multiple dental succession. These 'prelacteal' teeth, as they are called, were first observed by Leche, in 1892, in certain Insectivora, but they have subsequently been found among the Marsupialia and in the seals. Röse has now found unmistakable vestiges of these teeth in the human jaw. Man, therefore, in common with many other mammals has four sets of teeth, instead of two as formerly supposed.

Röse's investigations upon the teeth of Amphibia Reptilia and fishes demonstrate conclusively the truth of Hertwig's theory that teeth are modified scales which have passed into the mouth cavity. He finds that the rudiments of the first series of teeth in each of these types develop exactly after the manner of the placoid dermal scale. The second series of teeth develop after an intermediate type, and it is only the third series of teeth which develop from the typical dental fold lying suspended within the mesoblast, or lower tissue of that layer. Dr. Röse, with Prof. Kükenthal, of Jena, has been the most active supporter of the theory of the origin of complex tooth crowns by concrescence of primitively separate cusps, and this 'concrescence theory' has spread very rapidly in Germany as an explanation of the mode of origin of the elaborate tooth forms. There are very slight grounds of evidence for it among the mammalia; in fishes, however, it has long appeared probable that the well-known type of shark tooth (*Lamna*), consisting of three cusps united at the base, so abundantly found in the phosphate beds of South Carolina, represents a concrescence. Röse has now made a very careful study of the tooth development of *Chlamydoselachus anguineus*, Garman, and finds conclusive evidence that the com-